

REMARKS

Claims 1, 8, 15, and 22 remain for reconsideration. Claims 2-7, 9-14, 16-21, and 23 were previously cancelled.

Applicants note with appreciation the withdrawal of all previous grounds of rejection. The claims stand rejected on newly cited art as follows:

1. Claims 1 and 15 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over USP 6,724,789 to Vujkovic-Cvijin ('789) further in view of USP 6,359,915 to Koch ('915).
2. Claims 8 and 22 stand rejected under § 103(a) as being unpatentable '798 and '915, as above, further in view of US USP 6,222,861 to Kuo ('861).

These rejections are respectfully traversed based on the following discussion.

Briefly, a controller comprises a high bandwidth mode and a low bandwidth mode. When initially locking to a new channel, the high bandwidth controller mode may be used to supply more energy to drive tunable etalon (i.e. filter) to achieve faster seeking. When an error signal approaches within a

pre-defined threshold of zero error, the controller may be switched to a lower bandwidth mode supplying less power to a temperature controlled sled to softly approach the target frequency and avoid overshoot. The lower bandwidth controller mode may keep the noise level lower and provide better frequency tracking stability to the tunable laser. As previously amended, it has been further specified that course adjustments are made in the higher bandwidth mode driving the etalon and fine tuning adjustments are accomplished in the lower bandwidth mode driving the temperature controlled sled.

The primary reference, '789, states on column 4, lines 8-15:

"This allows, for example, high speed frequency tuning of the laser light to be effected by adjusting the injection current (for maintaining a signal at a desired channel frequency, for example) while using thermal control of the laser for larger, slower changes (for example, to select the channel for a particular laser, to maintain the injection current roughly centered within an adjustment range, and the like)" (emphasis added).

Thus, '789 does not make high speed adjustments with an etalon, as claimed, rather, it makes these adjustments by adjusting the injection current.

Further, '789 does not make fine tuning adjustments with thermal control as claimed, rather '789 clearly states that "larger" changes are made in

this manner. This is opposite to the claimed invention.

The Examiner appears to have cited '789 (above) for teaching a multiple bandwidth controller. However, it unfortunately does not teach or suggest controlling the parameters recited in Applicant's claims. The Examiner has therefore combined the teachings of '915 to show course tuning with a Bragg filter and fine tuning with temperature control.

However, it is improper to combine '789 and '915 in this manner, because, even assuming *arguendo* that '789 does disclose a multimode controller, it clearly controls "large" (i.e. course) tuning with temperature. Thus, even if one were to combine the references, the multimode controller of '789 would still have to use temperature for course adjustments as this is what is clearly taught. Since this is opposite to the claimed invention, the combination fails to make a case for *prima facie* obviousness.

Applicant's claim 1 and similarly independent claim 15, now recite ".a temperature controlled sled to tune the ECDL; an etalon to tune the ECDL;...said controller to initially drive said etalon in said high bandwidth mode for course tuning adjustments and then in said lower bandwidth mode to drive said temperature controlled sled for fine tuning adjustments when an error signal associated with a target frequency is within a threshold range.

The combination of '789 and '915 can teach nothing but large (course) tuning with temperature. This opposite to what is claimed. As such, it is respectfully requested that these rejections be withdrawn.

The Examiner further relies on Kuo in rejecting claims 8 and 22. He appears to cite this merely for teaching a feed forward loop. However, as previously argued, Kuo appears to shows a "loop filter" driven in one of two modes; wide mode and narrow mode. Column 6, lines 44-50 indicate: "In one embodiment, loop filter 216 can be implemented as a programmable element to allow adjustment of the loop response based on the system requirement. For example, initially, the loop response can be set wide for increased likelihood of acquisition and quicker settling time. Once the wavelength of laser 112 has been approximately adjusted to the specified wavelength, the loop response can be narrowed for improved tracking and phase noise performance" (emphasis added).

However, both the "coarse" and "fine" tuning of Kuo appear to rely on the adjusting the transfer function of a "loop filter". In contrast, Applicant's course tuning in high bandwidth mode is carried out with an etalon and the fine tuning in low bandwidth mode is carried out with a temperature controlled sled.

Applying the high bandwidth mode to one tuning element and the lower bandwidth mode to a second type of tuning element is not taught o

suggested by Kuo nor, for the reasons noted above is it taught or suggested by '789 or '915. Thus, this combination also fails to make a case for *prima facie* obviousness and should be withdrawn.

In view of the foregoing, it requested that the application be reconsidered, that claims 1, 8, 15, and 22 be allowed and that the application be passed to issue. Please charge any shortages and credit any overcharges to Intel's Deposit Account number 50-0221.

Respectfully submitted,

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/Kevin A. Reif/

Kevin A. Reif
Reg. No. 36,381

INTEL
LF1-102
4050 Lafayette Center Drive
Chantilly, Virginia 20151
(703) 633-6834